

was introduced into the course of the electricity from the machine. There were two pieces, each about a quarter of an inch in thickness, and exposing a surface on each side equal to .about half a square inch; these were placed upon platina plates, one connected with the machine and electrometer (155), and the other with the discharging train, whilst a fine platina wire connected the two pieces, resting upon them by its two points. On working the electrical machine, it was possible to open the electrometer leaves about two-thirds of an inch.

158. As the platina wire touched only by points, the facts show that this salt is a far better conductor than ice; but as the leaves of the electrometer opened, it is also evident with what difficulty conduction, even of the small portion of electricity produced by the machine, is effected by this body in the solid state, when compared to the facility with which enormous quantities at very low tensions are transmitted by it when in the fluid state.

159. In order to confirm these results by others, obtained from the voltaic apparatus, a battery of one hundred and fifty plates, four inches square, was well charged: its action was good; the shock from it strong; the discharge would *continue* from copper to copper through four-tenths of an inch of air, and the gold-leaf electrometer before used could be opened nearly a quarter of an inch.

160. The ice vessel employed (156) was half an inch in width: as the extent of contact of the ice with the tin and platina was nearly fourteen square inches, the whole was equivalent to a plate of ice having a surface of seven square inches of perfect contact at each side, and only one-fourth of an inch thick. It was retained in a freezing mixture during the experiment.

161. The order of arrangement in the course of the electric current was as follows. 'The positive pole of the battery was connected by a wire with the platina plate in the ice; the plate was in contact with the ice, the ice with the tin jacket, the jacket with a wire, which communicated with a piece of tin foil, on which rested one end of a bent platina wire (48), the other or decomposing end being supported on paper moistened with solution of iodide of potassium (52): the paper was laid flat on a platina spatula connected with the

negative end of the
battery. All that part of the arrangement
between the ice
vessel and the decomposing wire point, including
both these,
was insulated, so that no electricity might pass
through the
latter which had not traversed the former also.